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A Comparison of the Reading Readiness of Kindergarten Pupils Exposed to Conceptual-Language and Basal Reader Prereading Programs. A Pilot Study. Final Report.

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Seventy-eight kindergarten children were randomly placed in four experimental classrooms. Two of the classes were taught with the basal reader approach to reading readiness, and two were taught with the conceptual-language program approach. An extensive pretest battery was given to these children in October 1967. Instruction in the two approaches was given from November 1967 to May 1968. At the end of the instructional period an extensive posttest battery was given to the children. This investigation was designed to test the effectiveness of the two methods of instruction in developing reading readiness in kindergarten. The conceptual-language program was found to be superior to the basal-centered program in promoting general readiness for reading. (WD)

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A COMPARISON OF THE READING READINESS OF KINDERGARTEN PUPILS EXPOSED TO CONCEPTUAL-LANGUAGE AND BASAL READER PREREADING PROGRAMS

A PILOT STUDY

FINAL REPORT

Cooperative Research Project No. 7-8426
and 8-A-024

August 3, 1968

by

C. Michael P. O'Donnell

Maine Department of Education

Augusta, Maine

1968

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CONTENTS

Page

ACKNOWLEDGMENTS ii

LIST OF TABLES vi

Chapter

I. PROBLEM AND PURPOSES 1

Problem 1
Purposes 3
Definitions 3

II. REVIEW OF RELATED RESEARCH 7

Kindergarten Reading Readiness Program 7
Prereading Skills 10
Visual Discrimination 11
Auditory Discrimination 12
Mental Age 13
Chronological Age 13
Cognitive Activities 14
Language Experiences 16

III. METHODS AND PROCEDURES 21

Pre-Experiment Activities 21
Pre-Testing of Sample 22
Instructional Period 23
Concept and Language Tests 24
Post-Testing of Sample 25
Description of Materials 25
Description of the Community 27
Description of the School District 27
Description of the Teachers 28
Description of the Sample 28

IV. ANALYSIS OF THE DATA 29

Analysis of Pre-Experiment Status 29
Analysis of Post-Experiment Test Results 36
Concept and Group Verbal Tests 62
Concept Tests 63
Group Verbal Tests 65

Page

Chapter

Correlations Between Pre- and Post-Experiment Measures 70

Summary 72

V. RESULTS, CONCLUSIONS, AND IMPLICATIONS 73

Pre-Experiment Status 74
Post-Experiment Results 74
Conclusions 77
Implications for Further Study 78

APPENDICES

A. KINDERGARTEN SCHEDULE 83

B. CONCEPT AND GROUP LANGUAGE TESTS 87

BIBLIOGRAPHY 93

LIST OF TABLES

Table — Page

1. Elementary School Data 28
2. Analysis of Variance of September Treatment Group Chronological Ages 29
3. Analysis of Variance of *Wechsler Intelligence* Full Scale, Verbal, and Performance Raw Test Scores 30
4. Means and Standard Deviations for *Wechsler Intelligence* Test Full Scale, Verbal, and Performance Raw Test Scores 31
5. Analysis of Variance of *Metropolitan Readiness Test*, Form A Pre-Test Scores 32
6. Means and Standard Deviations for *Metropolitan Readiness Test*, Form A Pre-Test Scores 33
7. Test of Association for *Gesell School Readiness* Maturity Ratings 34
8. Analysis of Variance of *Wepman Auditory*, Form I Pre-Test Error Scores 34
9. Analysis of Variance Allyn and Bacon *Pre-Reading* Test, Visual Subtest, Form I 35
10. Tests of Significance of the Equality of Group Regression Coefficience of the *Metropolitan Readiness Test*, Form B on Form A. 37
11. Analysis of Variance on the Listening and Alphabet Metropolitan Readiness Test, Form B Post-Test Scores 38
12. Analysis of Covariance on Selected *Metropolitan Readiness Test*, Form B Scores 39
13. Means and Standard Deviations for *Metropolitan Readiness Test*, Form B Subtest Groups 40
14. Means for Selected Subtest of the *Metropolitan Readiness Test*, Form B Adjusted for Form A 41

Table Page

15. Test of Significance of the Equality of Group Regression Coefficience for the Allyn and Bacon Pre-Reading Visual Subtest and the Wepman Auditory Test, Form I and II 42

16. Analysis of Variance of the Allyn and Bacon Pre-Reading Visual Subtests Form I 43

17. Analysis of Covariance for the Wepman Auditory Form II Post-Test Scores Adjusted for Form I Pre-Test 44

18. Analysis of Variance of the Allyn and Bacon Pre-Reading Auditory Discrimination Form II Subtests 45

19. Analysis of Variance of the Treatment Group Means for the Murphy-Durrell Reading Analysis, Letter Name Subtests 46

20. Two-Factor Analysis of Covariance on Treatment and Chronological Age Controling for Metropolitan Readiness Test, Form A 47

21. Two-Factor Analysis of Covariance on Treatment and Chronological Age Controling for Intelligence and Metropolitan Readiness Test, Form A 49

22. Two-Factor Analysis of Covariance on Treatment and Maturity Controling for Metropolitan Readiness Test, Form A 51

23. Two-Factor Analysis of Covariance on Chronological Age and Maturity Controling for Metropolitan Readiness Test, Form A 52

24. Two-Factor Analysis of Covariance on Treatment and Sex Controling for Metropolitan Readiness Test, Form A 53

25. Two-Factor Analysis of Covariance on Treatment and Intelligence Controling for Metropolitan Readiness Test, Form A 55

26. Two-Factor Analysis of Covariance on Treatment and Social Economic Status Controling for Metropolitan Readiness Test, Form A 57

Table Page

27. Medians and Modes of Teacher November, February, and May Ratings of Pupil Over-all Classroom Work 59

28. Medians and Modes of Teacher November, February, and May Ratings of Pupil Over-all Classroom Behavior 60

29. Medians and Modes of Teacher November, February, and May Ratings of Pupil Adjustment to Other Children 61

30. Medians and Modes of Teacher November, February, and May Ratings of Pupil Social Participation 62

31. _t_ Tests for Pre and Post _Science Concept_ Test I Mean Scores 64

32. _t_ Tests for Pre and Post _Science Concept_ Test II Scores 65

33. Free Verbal Responses of Average and High Ability Pupils to an Illustration 67

34. Cooperation of Average and High Ability Pupils In a Group Assembly Task 68

35. Free Verbal Responses of Average and High Ability Pupils to a Visual 69

36. Correlation Matrix 71

CHAPTER I

PROBLEM AND PURPOSES

The main purpose of this study was to determine the effectiveness of an informal conceptual-language program in developing readiness for reading in the kindergarten. Several variables found to correlate highly with success in beginning reading were isolated and studied in an attempt to assess interaction effects in two different reading readiness programs. In addition, the appropriateness of using significant key ideas from the disciplines as a basis for providing language experiences was explored.

The investigation was supported in part by a U. S. Office of Education Title IV small research grant. The project was funded to encourage the development and validation of teaching strategies and instructional aids that would be of consequence to teachers of young children. The participating school was visited frequently during the year by curriculum specialists and kindergarten teachers. Several regional meetings were scheduled by the writer to demonstrate materials prepared in conjunction with the study. A summary of the findings and recommendations will be disseminated by the Educational Resources Information Center (ERIC).

Problem

The aims of the kindergarten program, enumerated more than a century ago by Friedrick Froebel, encompass the harmonious development of the young child in a permissive social environment. The program is free of expectancy, and children are encouraged to create with expressive media in a constant activity of experimentation and exploration. More recently, however, the child-centered concept, which stresses informality and a high degree of flexibility in planning, has come under attack by educators and parents who feel that young children now possess sufficient maturity and the requisite experiences to warrant induction into formalized programs.

According to Morrison, many reading and curriculum consultants recommend in the kindergarten formal reading instruction extending beyond readiness.[1] The survey of related literature indicates a number of conflicting studies concerning the efficacy of formal reading programs in the kindergarten. Many major investigations of formal reading instruction in the kindergarten have used as a dependent variable an instrument specifically designed for the experimental treatments. Furthermore, no careful studies have been done to compare formalized reading in the kindergarten with a rich language-program, in which basic principles of child development are not compromised to achieve instructional goals more suitable for grade 1.

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[1] Coleman Morrison, "A Comparison Between Reported and Recommended Practices Related to Selected Aspects of the Kindergarten and Beginning Reading Program" (paper presented at the meeting of the American Educational Research Association, Chicago, Illinois, February 21, 1964), p. 3.

Another major limitation of the research on reading readiness in the kindergarten has been the tendency to isolate one or two variables that correlate significantly with reading achievement and to generalize that all five-year-olds need instruction in these skills, irrespective of their maturational levels.[1] There is ample evidence, however, that the ability to make auditory and visual discriminations, to relate experiences with a high degree of verbal facility, and to recognize letters reflects ability and an exposure to a highly verbal environment. Presence of these factors indicates a general state of readiness for reading.[2]

The critics of the kindergarten program often stress the absence of intellectual content and challenge for young children. Robison and Spodek point out that reading readiness workbooks are inadequate for helping kindergarteners to gather information, to derive insights, and to conceptualize.[3] They recommend that children be exposed through concrete experiences and language activities to significant concepts and key ideas dealing with mathematics, history, science, and economics. The authors conclude that commercially prepared prereading materials are too limited and are not intended to provide cognitive and affective stimulation.

Several questions remain unanswered concerning prereading instruction in the kindergarten. Would a program in which young children are given many opportunities to use language based on their own experiences be more effective for developing readiness for reading than an approach employing workbooks? Can significant content from the subject disciplines be used as a means for providing intellectual stimulation and language activities?

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[1] William Bacci, "Children Can Read in the Kindergarten," School Management, V (May, 1961), pp. 120-122.

[2] Lawrence M. Kadson, "Early Reading Backgrounds of Some College Freshmen," Journal of Educational Research, LII (December, 1958) pp. 151-153.

[3] Helen F. Robison and Bernard Spodek, New Directions in the Kindergarten (New York: Teachers College Press, Teachers College, Columbia University, 1965), p. 17.

Purposes

1. To determine the effect of two approaches (a basal reader program and a conceptual-language method) in developing prereading skills as measured by the achievement in reading readiness of four classrooms of children at the end of the kindergarten.

2. To evaluate the language and cognitive development of children exposed to a conceptual-language reading readiness program.

3. To assess the effect of instruction in both approaches on immature and mature pupils.

4. To ascertain the effect of instruction in both approaches on children of high, average, and low intellectual ability.

5. To determine the effect of instruction in both approaches on children from high, average, and low socio-economic backgrounds.

6. To explore the relationship in both approaches between chronological age and gains in reading readiness.

7. To compare the achievement of boys with that of girls in both approaches.

8. To determine the relationship between auditory and visual perceptual ability and progress in basal and reading readiness materials.

9. To determine the effect of formal prereading instruction upon the adjustment of children to school.

Definitions

1. Conceptual-language program was used by two classes of children taught by the same teacher. This approach consisted of identifying major cognitive and language concepts and using them as a basis for developing informal language experiences.

2. The basal reader program was used by two classes of children with a second teacher. The particular program selected for the study was Getting Ready to Read by Paul McKee and M. Lucille Harrison.[1]

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[1] Paul McKee and M. Lucille Harrison, Getting Ready to Read (Boston: Houghton Mifflin Company, 1962).

3. Reading readiness achievement, early reading progress, determined by the Metropolitan Readiness Tests, Forms A and B.[1]

4. Developmental maturity was the behavorial age of five-year-olds as determined by the Gesell Developmental Test.[2] Children who received a score of 5B or above were rated mature; those below this level were classified immature.

5. Mental ability was derived through the administration of the Wechsler Preschool and Primary Scale of Intelligence.[3]

6. Socio-economic status was established from the occupation levels discussed in the 1960 United States Maine Census.[4]

7. Auditory perception was established from the Wepman Auditory Test[5] and the Allyn & Bacon Pre-Reading Test, initial consonants subtest.[6]

8. Visual perception was the ability to recognize word forms and letters as measured by the visual discrimination of word forms subtest of the Allyn & Bacon Pre-Reading Tests[7] and the

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[1] Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Metropolitan Readiness Tests (New York: Harcourt, Brace and World, Inc., 1964).

[2] Francis L. Ilg and Louise B. Ames, Gesell Developmental Test (New Haven: Gesell Institute of Child Development, 1965).

[3] David Wechsler, Wechsler Preschool and Primary Scale of Intelligence (New York: Psychological Corporation, 1967).

[4] U. S. Department of Commerce, Bureau of the Census, United States Census Population: 1960, General Social and Economic Characteristics, Maine.

[5] Joseph M. Wepman, Auditory Discrimination Tests Forms I and II (Chicago: Language Research Associates, 1958).

[6] William D. Sheldon and others, Reading Achievement Tests Pre-Reading Test, Forms I and II (Boston: Allyn & Bacon, Inc., 1963).

[7] William D. Sheldon and others, Reading Achievement Tests, Pre-Reading Test, Forms I and II (Boston: Allyn & Bacon, Inc., 1963).

Murphy-Durrell Reading Readiness Analysis Test, letter names subtest.[1]

9. Social adjustment to school was based on three independent ratings by the teachers in both treatments using the "Adjustment Rating Scale," a checklist of pupil behavior developed by the Chicago Cooperative Research Project.[2]

Organization of the Study

The problem and purposes of this study are discussed in Chapter I. The research pertaining to the problem is reviewed in Chapter II. An explanation of the two readiness treatments, the instruments used to obtain the data, the composition of the sample, and the procedure for conducting the study are presented in Chapter III. Findings resulting from the treatment of data appear in Chapter IV. The conclusions and implications drawn from the data collected in this report are discussed in Chapter V.

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[1] Helen A. Murphy and Donald D. Durrell, Reading Readiness Analysis Test (New York: Harcourt, Brace, and World, 1965).

[2] William Itkin, "Adjustment Rating Scale," Chicago Board of Education Cooperative Research Project, (Mineographed).

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CHAPTER II

REVIEW OF RELATED LITERATURE

An examination of the research and literature dealing with reading readiness programs in the kindergarten indicates that teaching young children to read continues to be one of the most controversial issues of the late sixties. Many schools induct all kindergarten children into a reading readiness program utilizing commercially prepared materials formerly associated with instruction in grade 1. Several articles written by specialists in childhood education, however, have vociferously denounced formal prereading activities in the kindergarten. In her national survey Austin reported that 26.8 per cent of the school systems which maintain kindergartens provided planned, sequential reading programs.[1] Supplementing her questionnaire were the opinions of 407 educators who were asked to state their professional views regarding the teaching of formal reading before grade 1. A wide divergence of opinion substantiated the claim of controversy over reading instruction for five-year-olds. Many consultants expressed concern that a text-centered program was incompatible with the developmental needs of young children; others, that kindergarten teachers were not trained to teach reading.

Kindergarten Reading Readiness Programs

Perhaps the most widely cited investigation on reading in the kindergarten was conducted in the Denver Public Schools under the direction of Brzeinski.[2] A systematic program of planned instruction in skills basic to beginning reading was undertaken with 4,000 kindergarten children. Classes were divided into four groups: (A) Control Group I, regular program in the kindergarten and in later grades; (B) Control Group II, regular program in the kindergarten and experimental reading program in the later grades; (C) Group III, experimental program in the kindergarten, regular program beyond; (D) Group IV, full-term experimental group. The control groups received "regular" kindergarten instruction with no attempt made to teach specific skills. The experimental classes received twenty minutes of daily instruction in a program that presented skills basic to beginning reading. Using the pre- and post-test gains on an instrument designed specifically to measure readiness in the experimental groups as a criterion variable, significant differences were noted in favor of the formal classes. No description of the activities used by the control groups is available.

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[1] Mary C. Austin and Coleman Morrison, The First R: The Harvard Report on Teaching Reading in the Elementary Schools (New York: MacMillan Company, 1963), p. 13.

[2] Paul McKee, Joseph E. Brzeinski and M. Lucille Harrison, The Effectiveness of Teaching Reading in the Kindergarten (Denver Public Schools, Cooperative Research Report Project Number 5-0371, Denver, Colorado, 1966), pp. 35-60.

Cooper studied the relationship between a beginning reading program in the kindergarten and reading achievement at the end of the first grade.[1] A ten-week period of reading instruction was provided in the kindergarten. The experimental group means were higher than the control group means in a test of reading achievement at the end of the first grade; however, despite 100 to 125 minutes of instruction per week the differences were not significant. A major limitation of the study was that the control and experimental groups used reading materials that differed substantially in development and philosophy. The instrument used to measure achievement were biased in favor or the experimental group.

Ploghoft found that dependence on reading readiness workbooks in the kindergarten did not contribute measurabley to the child's readiness for reading.[2] Pupils exposed to a general program designed to provide opportunities for social growth, work with manipulative clay, music and rhythms, and other experiences, made similar gains in readiness. The investigator concluded that reading readiness is too involved to be contained within the pages of a workbook. The possibility of contaminated results cannot be discounted since the same teachers taught both the experimental and control classes.

Two approaches for developing readine readiness, varying in degree of formality, were studied by Blakely and Shadle.[3] One group followed a basal-centered program; the other used materials that grew out of each child's own experiences. The Metropolitan Reading Readiness Test and an informal maturity checklist were used as dependent variables. Girls did equally well in either approach, but boys achieved significantly greater scores in the informal program. The investigator questioned whether the two approaches used in the study really differed in content or in degree of formality.

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[1] Glen O. Cooper, "A Study of the Relationship Between a Beginning Reading Program in Kindergarten and Reading Achievement in the First Grade" (unpublished doctoral dissertation, Department of Education, Colorado State College, 1962), pp. 116-127.

[2] Milton H. Ploghoft, "Do Reading Readiness Workbooks Promote Reading?" Elementary English, XXXVI (October, 1959), 424-426.

[2] Paul W. Blakely and Erma M. Shadle, "A Study of Two Readiness for Reading Programs in the Kindergarten," Elementary English, XXXVIII (November, 1961), 502-505.

The Denver study was replicated in the Grand Forks, North Dakota, schools.[1] A consensus was reached among kindergarten teachers that their prereading programs should consist of instructional jobs that are specifically related to learning how to read. Two hypotheses were formulated: (1) kindergartners of three defined levels of ability who follow a structured reading readiness program (workbook) will achieve significantly higher reading readiness scores than comparable children who are instructed in an informal program, and (2) a higher percentage of the children in the experimental classes will exceed the standard for being ready for reading at the end of the kindergarten. Both statements were accepted. Almost twice as many children of below average ability mastered prereading skills in the experimental classes. On the basis of percentage, more pupils in this group also meet standards for beginning reading instructions.

Durkin completed several longitude studies on children who learned to read prior to grade one.[2] She reported that schools tend to put major emphasis on age-level and grade-level criteria as a prerequisite to certain learnings but only secondary attention to differences among children of the same chronological age. Early readers tended to come from smaller families with siblings spaced closer together. There was no difference in the chronological age of the readers and the nonreaders; however, parents indicated that the former had walked and talked at earlier ages. One-third of the early readers had I.Q. scores under 110. Early readers viewed television less often, but seemed to derive more learnings from the experience. Durkin stressed the need for more opportunities for verbal stimulation in the kindergarten and some systematic instruction for children who are ready to read.

Sutton instituted a voluntary reading class in the kindergarten for children who exhibited an interest in books.[3] These pupils were given 15 to 20 minutes of formal reading instruction a day. Test scores revealed that they made significant progress and maintained this advantage in grade 1. A high correlation was noted between reading skill and ability and desire to write. Only children who showed an interest in reading and an inclination for instruction were included in the investigation.

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[1] Hugh Schoephoerster, Richard Barnhart, and Walter M. Loomer, "Teaching of Prereading Skill in the Kindergarten," Reading Teacher, XIX (February, 1966), 352-357.

[2] Dolores Durkin, "Children Who Learned to Read Before Grade One; A Second Study," Elementary Journal, XLIV (December, 1963), 143-148.

[3] Marjorie H. Sutton, "First Grade Children Who Learned to Read in Kindergarten," Reading Teacher, XIX (December, 1965), 192-196.

Bradley sought to answer the question whether a child would lose or gain if formal systematic instruction in reading is not provided until he is ready.[1] Resolution of the problem was attempted over a two year period through a study of two groups of children who had different reading readiness programs. The program for the experimental group reflected the concept that readiness training is designed to stimulate growth in all areas of development. Formal systematic instruction in reading was delayed until each child was considered ready. In contrast, formal instruction was provided to the pupils in the regular classes immediately upon entrance to grade 1. At the end of three years, the results provided an unequiovocal endorsement of the child development approach. By the end of the third year, the experimental group was superior in all aspects of reading development. This investigation suggests that the amount of time devoted to readiness for reading may be insufficient in some school systems.

The extent to which a two-year-old can profit from reading instruction was explored by Fowler.[2] Specifically, the investigator was interested in determining whether extensive intellectual stimulation in the early years of childhood leads to frustration, learning inhibitions, and possible psychosocial maladjustment. A two-year-old child was given intense stimulation employing play techniques to cope with his short attention span. The results revealed that high verbal and manipulative abilities can, over a period of time, contribute to progress in learning to read. The question concerning the value of early systematic phonics training was not resolved.

Prereading Skills

Many studies have been undertaken in an attempt to identify and isolate specific skills and developmental factors that are directly related to subsequent success in learning to read. Researchers have correlated reading achievement with such variables as visual and auditory discrimination, knowledge of letter names, sex differences, maturity, and age of school entrance. Whenever high relationships are noted, kindergarten teachers are usually importuned to modify their programs according to the results of the experiment. Since the interaction effects of specific prereading skills were explored in this study, several related investigations are reviewed in this section.

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[1] Beatrice E. Bradley, "An Experimental Study of the Readiness Approach to Reading," Elementary School Journal, LVI (February, 1956), 262-267.

[2] William Fowler, "Teaching a Two-Year-Old to Read: An Experiment in Early Childhood Learning," Genetic Psychology Monographs, LXVI (November, 1962), 181-183.

Visual Discrimination

Eames investigated the claims of Ilg and Ames that children's eyes are too immature for them to start reading safely at the usual ages of school entrance.[1] Five-year-olds were found to have more accommodative power than at any subsequent age. The poorest visual acuity discovered among the subjects studied was quite sufficient for reading the usual texts. The results would not lend credence to the contention that reading must be deferred to later grades because of inadequate visual functioning.

The inability of many young children to perceptually recognize and manupulate words was pointed out by Vernon.[2] Some children view a word as some adults see an incomplete picture. They attend to only one part; consequently, their perceptual image of the other parts is diminished or lost. Early instruction in reading may be inappropriate because children are less likely to see words as wholes than as meaningless jumbles of details with no apparent relationship between them.

The literature on the effects of letter-name knowledge and learning to read is confusing and contradictory. Muchl and Linehan, in separate studies, tested Durrell's contention that knowledge of letter names is the best single predictor of word recognition and reading performance for first grade children.[3], [4] Muchl discovered that the acquisition of letter names by five-year-olds interfered with subsequent performance in learning to associate picture names and nonsense words containing the same letters as the critical stimuli. Linehan reported no significant differences in the first grade reading achievement of pupils who had and those who did not have training in letter names and sounds in the kindergarten.

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[1] Thomas H. Eames, "Physical Factors in Reading," Reading Teacher, XV (May, 1962), 427-432.

[2] Magdalen D. Vernon, Backwardness in Reading (Cambridge: Cambridge University Press, 1957).

[3] Siegmar Muchl, "Effects of Letter Name Knowledge on Learning to Read a Word List in the Kindergarten," Journal of Educational Psychology, LII (August, 1962), 181-186.

[4] E. B. Linehan, "Instruction in Letter Names and Sounds as Related to Success in Beginning Reading" (unpublished doctoral dissertation, Department of Education, Boston University, 1957).

Wilson found a remarkably close relationship between a child's reading ability and his knowledge of letter names and sounds.[1] He noted that with children who had limited verbal stimulation formal drill on learning names and sounds of letters was quite barren of results. Knowledge of letter names indicates that the child has had a combination of rich experience and exposure to printed forms and that he is now ready to profit from reading instruction.

Auditory Discrimination

Wepman defines the process of auditory discrimination as the ability to distinguish between phonemes used in speech.[2] He discusses three levels of auditory development: (1) acuity, the ability to collect sounds from the environment and transmit them to the brain; (2) understanding; and (3) discrimination among sounds and retaining meaning. The acquisition and use of sounds in the speech of the child is progressive. As auditory discrimination develops, more speech sounds become available to the speaker. The fact that many children do not develop the ability to make fine aural discriminations until seven or eight years of age should be of significant to planners of kindergarten.

Hillerich observed noticeable decreases in speech problems in kindergarten children exposed to an intensive auditory readiness program.[3] He concluded that further research would be necessary to determine the effectiveness of a concentrated auditory perception program in the kindergarten as a means of reducing speech and articulation difficulties.

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[1] Frank T. Wilson and others, "Reading Progress in the Kindergarten and Primary Grades," Elementary School Journal, XXXVIII (February, 1938), 442-449.

[2] Joseph M. Wepman, "Auditory Discrimination, Speech, and Reading," Elementary School Journal, LX (March, 1960), 325-333.

[3] Robert L. Hillerich, "Kindergarteners Are Ready: Are We?" Elementary English XLII (May, 1965), 569-573.

Mental Age

Gates found that mental age was a significant factor in learning to read, but other considerations were as important.[1] In his groups, correlations between mental age and reading achievement were greatest in classes where the quality of instruction was the highest. He implies that the difference between good and poor teaching was the provision made for individual differences. Children with mental ages of 60 months could be taught to read if the materials and methods were adapted to them as individuals. These results clearly indicate that statements concerning the necessary mental age for learning to read should be made in conjunction with other factors.

School Entrance Age

Hampleman speculates that schools favor chronological age as the criterion for entrance because of the difficulty involved in getting parents to accept mental age, maturity, or reading readiness scores as a basis for school admission.[2] No significant differences in reading achievement were noted between pupils who started school at the age of six years four months and those who entered earlier. The study suggests that too many factors influence school success to make chronological age an adequate criterion for entrance and educational planning.

After studying the school performance of 101 under-age children at the end of 6 years in school, King concluded that younger children did not achieve up to grade level and were more prone to poor social adjustment.[3] When given the same academic experiences, older children had a significant advantage in academic achievement. King emphasized that although mental ability is important for academic progress, social emotional, and physical development and preschool experience also contribute significantly to the child's early success in school.

Sex Differences

Ilg and Ames reported that kindergarten and first grade boys are often six months behind girls developmentally.[4] As measured by general behavioral devices, boys had less verbal facility, were behind in writing letters of consistent size, and supplied fewer parts to the incomplete man than girls. The Gesell Clinic recommends that because of differences in developmental levels, boys should be at least six and one-half years old chronologically before entering first grade.

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[1] Arthur I. Gates, "The Necessary Mental Age for Beginning Reading," Elementary School Journal, XXXVII (February, 1937), 497-508.

[2] Richard S. Hampleman, "A Study of the Comparative Reading Achievement of Early and Late School Starters," Elementary English, XXXV (May, 1959), 331-334.

[3] Inez B. King, "Effect of Age of Entrance into Grade One Upon Achievement in the Elementary School," Elementary School Journal, XX (February, 1955), 67.

[4] Francis L. Ilg and Louise B. Ames, School Readiness (New York: Harper and Row, Inc., 1965), 359-364.

Maxwell suggests that boys should not be admitted to school until they are least six years old.[1] He writes that in the critical primary years, we send boys to compete with an already superior opponent. Criteria for school admission should include attention to adequate hand-to-eye coordination and facility in using large muscles. Modifying school programs for boys and girls would provide for their developmental differences.

Cognitive Activities

Most reading authorities and child development specialists agree on the need for designing a curriculum which includes stimulating content and experiences for young children. Intellectual content becomes the basis for the child's thinking and subsequent language usage. Wann, for example, stated "there is much evidence to indicate the close relationship of language and thought, and indeed, the dependence of good clear thinking on the development of language."[2] The major premise of this investigation was that kindergarten children can be exposed to significant ideas which would provide many opportunities for them to use their language. A brief review of some of the studies which have implications for curriculum development for young children is presented in this section.

Bruner has written extensively on the cognitive development of children.[3] He begins with the hypothesis that the foundations of any subject may be taught in some form at any age. Commenting on the intellectual development of young children, he recognizes that at each stage of development, children view their immediate environment in certain characteristic ways. The task of the school in teaching pupils is one of representing the structure of content in terms of the way which children perceive their environment at that particular stage in their development. When one provides principles that are considered essential the child is assisted in moving gradually from concrete thinking to the utilization of more conceptually adequate modes of thought at subsequent stages. This premise embraces the "spiral curriculum," translating content at each grade in such a way as to challenge children and help them attain more precise understandings in later life.

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[1] John J. Maxwell, "What to Do About the Boys," National Education Association Journal, XLIX (March, 1960), 26-28.

[2] Kenneth D. Wann, Miriam S. Dorn, and Elizabeth A. Liddle, Fostering Intellectual Development in Young Children (New York: Teachers College, Columbia University, 1962), p. 83.

[3] Jerome S. Bruner, The Process of Education (Cambridge: Harvard University Press. 1960), pp. 33-55.

No review of the literature on children's thinking would be adequate without consideration of the work of Piaget.[1] He distinguishes three stages in the intellectual development of the child. He sees cognitive growth of children related to the development of logical thinking rather than language. The five-year-old's thinking is largely egocentric, intuitive rather than deductive, characterized by a lack of reversibility. Logic, however is based on operations, a process of obtaining data and transforming this information so that it can be organized and used selectively to solve problems. This stage does not appear until approximately age seven. Piaget's theory suggests that young children should have many activities with objects that require classification, manipulation and experimentation.

Amster analyzed the ability of kindergarten children to do certain types of thinking.[2] He found that most kindergarten pupils were capable of perceptual and associative thinking processes which require only gross recognition and intuition. He concluded that with specific and deliberate practice, five-year-olds can be guided in the acquisition of basic deductive thinking skills. He concurs with Piaget, however, that deductive concepts become more evident as children grow older.

Hunt indicates that the rate of the child's intellectual development is to a considerable degree a function of his interaction with his environment.[3] He strongly advocates experience as a prime factor in intellectual growth; "constructs or discovery depends on existing conceptual systems in the child." Hunt differs from Piaget in that he does not view as necessary the development of certain requisite "structures" in the child before his encounters and experiences with his environment can effect a change in his intellectual process.

Taba questions whether varied experiences and teaching strategies address specifically to the development of thought would make Piaget's stages appear earlier.[4] She suggests that if teachers are skilled in the art of questioning they can help pupils explain significant phenomena which will stimulate thinking and language. She states that teaching children should not consist primarily of communicating information; rather the teacher should assume a crucial role in helping pupils to explain why certain events transpired. Recognizing that thought generally follows a sequence in which the simpler operations precede the abstract, the school can help children assimilate new information by providing experiences that gradually extend existing conceptual schemes.

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[1] Barbel Inhelder and Jean Piaget, The Growth of Logical Thinking from Childhood to Adolescence (New York: Basic Books, 1958). p. 134.

[2] Harry Amster, "Concept Formation in Young Children," Elementary English, XLI (May, 1965), 543-552.

[3] J. McV. Hunt, Intelligence and Experience (New York: Ronald Press, 1961).

[4] Hilda Taba, Curriculum Theory and Practice (New York: Harcourt, Brace, and World, 1962), p. 343.

Vygotsky shares Taba's criticism of Piaget's formulations; "Studying children apart from the influence of instruction excludes a very important source of change."[1] He stresses the gradual process of intellectual development, which he says is contingent upon the child's mastery of language, which is the social means of thought. Classroom activities should be planned and implemented to precede development and to stimulate its growth. The child's school instruction, environmental influences, and cultural expectations all greatly contribute to the child's cognitive development.

A survey of the literature on activities for young reveals two views concerning the role of instruction for young children. The Geneva School takes the position that the child's cognitive growth is contingent upon his particular stage of development, believing that before age seven there is no pronounced desire for logical justification.[2] Bruner recognizes the limitations imposed by the child's development; however, he feels that the school can lead intellectual growth by providing many challenging experiences. Young children can profitably be exposed to significant content. "Any idea can be represented honestly and usefully in the thought forms of children of school age, and that these first representations can later be made more powerful and precise the more easily by virtue of this early training."[3]

Language Experiences

Studies and articles dealing with the role of language experiences in beginning reading have been confined mainly to grade 1 and above. The language experience approach can easily permeate instruction at all grade levels, bringing reading and the other communication skills together in a relatively unstructured program. In this approach there is no need to distinguish between the reading program and the development of listening, speaking, and writing abilities. According to Lee and Allen, the language experience approach is a way of thinking about reading development.[1] The approach is based on pupils' own oral productions and serves to reinforce reading as part of the total communication skills. Allen defines the rationale as follows:

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[1] Lev Semenovich Vygotsky, Thought and Language, edited and translated by Eugenia Hanfman and Gertrude Vada (Boston: Massachusetts Institute of Technology Press, 1962), pp. 116-117.

[2] Inhelder, Growth of Logical Thinking, p. 134.

[3] Bruner, Process, p. 33.

> 1. What he thinks about he can talk about.
> 2. What he can talk about can be expressed in painting story telling, writing or some other form.
> 3. What is written can be read.
> 4. The books we read are merely what the author would say to us.[2]

The study conducted by Loban stresses the importance of providing varied opportunities for language usage in the kindergarten.[3] Children who were high in general language ability, as determined by teacher ratings of oral language and vocabulary test scores, were also high in reading ability. Those who were low in general language ability were also low in reading ability. In addition, the gap between the high and low groups widens from year to year. The language experience approach contributes to overall reading achievement as it increases general language ability. When the kindergarten teacher emphasizes oral expression based upon the child's experiences, she is creating high motivation for reading one's own material and providing the basis for subsequent and easy transfer to reading what others have written.

Thomas analyzed the oral language patterns of culturally disadvantaged children.[4] These children differed substantially on primary word lists from achieving pupils. The disadvantaged child needed help in sentence structure, usage, and vocabulary; many of these children were unable to organize their responses into acceptable answers. Thomas suggests that a carefully planned program of language experience be instituted in the kindergarten to stimulate language growth.

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[1] Doris M. Lee and Roach V. Allen, Learning to Read Through Experience, (New York: Appleton-Century-Crofts, 1963), p. 30.

[2] Ibid., p. 46.

[3] Walter D. Loban, The Language of Elementary School Children, National Council of Teachers of English, Report Number 1 (Champaign, Illinois: National Council of Teachers of English, 1963).

[4] Dominic Thomas, "Oral Language of Culturally Deprived Kindergarten Children," Reading and Inquiry, Edited by J. Allen Figurel, International Reading Association Proceedings (Newark, Delaware: The Association, 1965), 448-450.

Stauffer compared the effectiveness of the language experience approach with a basal reader program.[1] He found that the language experience program is likely to result in better achievement in reading and spelling but not in vocabulary and arithmetic. The experience activities seemed to neutralize differences in reading achievement of boys and girls. Children of average and above-average ability taught by the language experience method made better progress than those in the basal classes. Low ability pupils made about the same gains in either approach. The tests used to measure achievement did not provide information on many of the positive features attributed to the language experience approach such as changes in reading attitudes, creative writing, critical thinking, and reading tastes.

In summary, the literature dealing with reading readiness programs in the kindergarten reveals considerable lack of agreement regarding the effectiveness of certain educational practices. Several generalizations are discernible, however:

1. Reading readiness instruction may better be described as early reading progress.

2. Children can be taught to read prior to grade 1; however, the desirability of this practice still remains unresolved.

3. When exposed to the same program, younger children make less progress than older pupils of comparable intelligence.

4. Success in beginning reading is dependent upon many interacting factors: quality of instruction, degree of individualization, pacing, maturity, and expectations of the teachers.

5. The child's success in reading instruction is dependent upon his level of perceptual functioning rather than upon physical development.

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[1] Russell G. Stauffer, "The Effectiveness of the Language Arts and Basal Readers Approaches to First Grade Reading Instruction," Reading Teacher, XX (October, 1966) 18-24.

6. There are no observable deleterious social and emotional effects due to formal reading instruction prior to grade 1.

7. The child's level of concept formation is closely related to his language development.

8. Varied educational opportunities for kindergarten children to interact with their physical environment can greatly enhance cognitive and language development and subsequently readiness for reading.

9. Young children can profitably be exposed to significant content in a context which is appropriate for their level of development. This provides the basis for thinking, talking, writing and reading about their experiences.

Because of the lack of carefully executed research on the effectiveness of an informal language experience program in the kindergarten, the study described in the following chapter was planned and conducted.

CHAPTER III

METHODS AND PROCEDURES

In June, 1967, permission was requested from the Waterville School Department to conduct the reading readiness study in four kindergarten classes. The research proposal was submitted to the city administrative and supervisory personnel for review. The investigator was asked to attend two preliminary meetings with the central staff to answer questions and to discuss the requirements for the study. The school board approved the recommendation of the chief school officer that the system participate in the project, and pledged full cooperation for the undertaking.

The reading consultant advised the kindergarten teachers in June of the pending study and secured names of those who wished to participate. Seven teachers agreed to subsequent placement in any of the treatment groups. The names of two teachers in one building were drawn from the list and randomly assigned to one of the treatments. One teacher used the basal approach with two classes while the second teacher used the conceptual approach with two classes. Pupils were placed in the four classes by means of a table of random numbers.

Pre-experiment Activities

A preschool orientation meeting was scheduled with the kindergarten teachers in September. Attention was directed to the purposes of the study, modifications in the existing program, and procedures that teachers would follow until the study commenced November 6. City administrative personnel attended this session.

The experiment was concerned with approaches for developing reading readiness in the kindergarten. However, unlike most studies, it became evident that attention would have to be focused on all aspects of the total kindergarten program. A specialist in early childhood education was engaged from the University of Maine to observe teachers in both treatments prior to the study. She attempted to equate the classes in terms of overall teaching effectiveness, availability and utilization of materials, and daily activities. The teachers met several times with the consultant to review their work and discuss problems concerned with the general program. A written set of guidelines for the kindergarten was prepared and distributed to both teachers in October.

Two separate workshops to explain the readiness approaches were scheduled with the teachers before the introduction of the treatments. The basal reading readiness sessions were conducted by a consultant provided by the publisher. The conceptual-language teacher met with the investigator. The inservice activities stressed:

1. the rationale for each approach
2. an explanation of the materials
3. the teaching procedures
4. the scheduling arrangements

The reading supervisor for the city schools worked closely with the research staff and the kindergarten consultant.

Several classroom surveys were requested and conducted to assure comparability of resources. Books, manipulative playthings, doll furniture, large blocks, and audio visual equipment were provided for each teacher.

The kindergarten classes followed essentially the same program and time schedule prior to the introduction of the treatments.

Pre-Testing Sample

An extensive pre-test battery was given to the children in small groups during the last two weeks in October. All tests were administered and scored by the investigator. The intelligence and developmental tests were administered and interpreted by examiners with training in psychological testing.[1] Teachers were not advised of the test results.

The pre-test instruments included the Metropolitan Readiness Test,[2] Gesell Developmental Test,[3] Wechsler Preschool and Primary Scale of Intelligence,[4] the visual subtest of the Allyn and Bacon Pre-Reading Test,[5] and the Wepman Auditory Discrimination Test,[6] Form I.

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[1] The Wechsler Preschool and Primary Intelligence Scale was substituted for the Kuhlman-Anderson Test since individually administered intelligence tests would be more valid to use with kindergarten children.

[2] Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Metropolitan Readiness Tests (New York: Harcourt, Brace and World, Inc., 1964).

[3] Francis L. Ilg and Louise B. Ames, Gesell Developmental Tests (New Haven, Connecticut: Gesell Institute of Child Development, 1965).

[4] David Wechsler, Wechsler Preschool and Primary Scale of Intelligence (New York: Psychological Corporation, 1967).

[5] William D. Sheldon and others, Reading Achievement Tests, Pre-Reading Test, Forms I and II (Boston: Allyn & Bacon, Inc., 1963).

[6] Joseph M. Wepman, Auditory Discrimination Tests, Form I and II (Chicago: Language Research Associates, 1958).

Teachers were asked to make an informal assessment of each child's readiness in November, 1967. In addition, the "Adjustment Rating Scale"[1] was used to make three independent judgments of each child's adjustment to school during the study.

Instructional Period

The children were given 116 days of instruction in both treatments, extending from November 6, 1967, to May 17, 1968. Instructional time was limited to 20 minutes per day with an additional 15 minutes alloted to seatwork or small-group activities. No one class of children had instructional time that was significantly greater than, or less than, that received by any other class. Except for the readiness approaches, all of the kindergarten classes followed the same general daily schedule, with regular attention being given to music, art, language, health, and social studies. Each teacher used the kindergarten curriculum bulletin prepared by the Ontario Department of Education.[2] In addition to listing subjects, this publication provides guidance for daily routines, group assemblies, pupil interests, and evaluation. No commercially prepared materials were used in any subject with the exception of workbooks used by the experimental reading readiness classes.[3]

A series of regular, separate inservice meetings was scheduled with both teachers to discuss the materials, pacing, and differentiation of instruction. The basal teacher met with the publishers consultant. Since both treatments were new to the teachers, they attended these sessions eagerly because of their relevance to immediate problems.

The content of the inservice meetings stressed proper use of each readiness program. The basal reader consultant emphasized specific adherence to the activities outlined in the teacher's manual. The conceptual-language sessions involved much interaction with the teacher to assure precise understanding of the cognitive and language concepts. Teachers in both treatments were requested to keep diaries of their activities.

The reactions of the teachers to the treatments were noted. Initially, the materials of the two approaches were so unrelated to their previous experiences that some misunderstanding and concern were expressed. The conceptual-language teacher had difficulty in differentiating between concept and unit teaching. The basal reader teacher expressed reservation concerning the expectations implied by the instructional materials. However, as both teachers began working with the approaches, their attitudes became quite favorably inclined toward their programs. The identification of specific problems by the consultants through classroom visitations and the regular inservice sessions helped to resolve most of the difficulties reported by the teachers.

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[1] William Itkin, "Adjustment Rating Scale," Chicago Board of Education, Cooperative Research Project, (Mimeographed).

[2] Ontario State Department of Education, Kindergarten (Ontario: Walker Press Limited, 1966).

[3] The daily kindergarten routine followed by both treatments can be found in Appendix A.

In addition to the kindergarten consultant, the state children's librarian was requested to visit the project school and to assist teachers in both treatments to make more effective use of classroom reading centers. Recommendations for the purchase of books, placement of materials, and techniques for storytelling were emphasized at inservice meetings that were directed toward the general kindergarten program.

Intermittent, unannounced classroom visits were made by the investigator throughout the project. The city reading consultant made frequent unscheduled visits to assure that both teachers followed the materials and techniques prescribed by the treatments within the time periods allotted for daily readiness instruction. The publishing company consultant and sales staff also visited the treatment classes to assure compliance with their recommendations. These observations were restricted to the readiness periods, but could be used as a basis for planning subsequent inservice meetings. It should be emphasized that both teachers received the same type, quantity, and quality of attention by the writer and the city reading supervisor.

Throughout the investigation, teachers were encouraged to use teaching techniques that they had found to be effective in preceding years. Children in the conceptual-language classes were not expected to complete an established sequence of activities. It was necessary to differentiate instruction in the basal program because of the wide range of maturity represented. Modified grouping practices were instituted at mid-year to instruct children at a level commensurate with their ability. Several conferences were arranged with the teachers to discuss and plan suitable alternate activities for children who experienced extreme difficulty in the basal materials.

It was established school policy that no children in the kindergarten be given a formal reading program beyond the readiness level. More mature and verbal pupils were afforded many opportunities to visit the classroom reading center, to dictate charts, and to share experiences as a means of enriching their listening, speaking, and reading vocabularies.

Concept and Language Tests

Four randomly selected subsamples were drawn from each treatment group at different times during the study and administered informal tests to assess the effectiveness of conceptual-language instruction. The two concept situations included pre-and post-measures to ascertain the effect of exposure to classroom activities related to specific concepts. The conversations were recorded and numerically rated.

Several other tests were developed in an attempt to measure group problem-solving ability and language facility. Samples of matched pairs of pupils were asked to agree on solutions, work cooperatively in performing certain tasks, and suggest possible outcomes for events. These situations involved the same person interacting with the pupils and were recorded to assure consistency in scoring the response.

Post-Testing of Sample

At the end of the 116-day instructional period, approximately two weeks were spent in post-testing pupils in the four kindergarten classrooms. During the two school days immediately following the instructional period, the Metropolitan Readiness Test, Form B,[1] was administered to the children. This widely-used instrument includes subtests on word meaning, listening, matching, alphabet, numbers, and copying. A measure of knowledge of letter names was derived from the Murphy-Durrell Reading Analysis Test.[2] The Wepman Auditory Discrimination Test,[3] Form II, provided data on auditory perception. The Allyn and Bacon Pre-Reading Test, Form II,[4] was used to obtain information on visual perception and auditory discrimination of initial consonants.

Once again, as with the pre-test instruments, administration and scoring was completed by the research staff and clerical workers. Teachers were not asked to do these tasks.

Description of Materials

The pupils in two kindergarten classes received instruction from the Houghton Mifflin Getting Ready to Read[1] readiness book. No additional materials were used for instructional purposes. This series was selected for use in this investigation because it represents one of the most widely used reading readiness programs in the kindergarten. The survey of related literature indicates that the majority of studies concerned with reading in the kindergarten used this program in their experimental classes.

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[1] Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Metropolitan Readiness Tests (New York: Harcourt, Brace and World, Inc., 1964).

[2] Helen A. Murphy and Donald D. Durrell, Reading Readiness Analysis (New York: Harcourt, Brace and World, 1964-65).

[3] Joseph M. Wepman, Auditory Discrimination Tests, Form I and II (Chicago: Language Research Associates, 1958).

[4] Sheldon, op. cit.

The series was developed by Paul McKee and M. Lucille Harrison and is based on the premise that each strange word included in beginning reading is strange to the child only in its printed form. Through preschool experience in listening and talking, he has already become thoroughly familiar with the spoken form and the meaning of many words. The important task in learning to read involves determining which of the thousands of spoken forms already familiar to the pupil is the one that the strange printed form represents. The program is designed to help the child visualize the familiar spoken form for which a strange printed word stands. The procedure for this process consists of using the context and the first sound of the strange word, and then only as many of the remaining sounds represented in the printed word as are required for deriving the needed spoken form. Using the context and the beginning sound together limits the pupil's choice to familiar spoken words which make sense and which begin with that sound. The prereading program consists of practice in using oral context, listening for beginning consonant sounds, distinguishing letter forms, using context and the beginning letter, and using context with strange printed words.

The conceptual-language program involves identifying major concepts in the subject matter fields and using these as a basis for providing informal language experiences. The approach contends that young children can profit from exposure to significant intellectual content on a semi-abstract level. These activities result in varied opportunities for language development including sharing experiences, listening, discussion centered around a theme, dictating stories, and group interaction.[2] Because readiness for reading is a general state involving a constellation of factors such as perceptual functioning, physical development, mental ability, and language facility, the conceptual-language program is designed to provide broad intellectual and verbal stimulation for every child.

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[1] Paul McKee and M. Lucille Harrison, Getting Ready To Read (Boston: Houghton Mifflin Company, 1960). This program was substituted for the Scott, Foresman materials since it had been used in several major studies involving reading readiness in the kindergarten.

[2] C. Michael P. O'Donnell, Reading Instruction in the Kindergarten, Maine State Department of Education (Augusta: State of Maine, 1966).

The method includes selecting key ideas and translating these into concrete experiences that would contribute to concept formation and language facility. No attempt is made to require that each child grasp all aspects of a particular concept; rather, each experience will be assimilated in varying degrees by each child according to his maturity and intellectual development. The concepts that are presented in the kindergarten will be considered again with much greater depth and precision in subsequent grade levels. The concepts become the means for exposing kindergarten children to challenging content without the expectancy and the limits implied in readiness workbooks.

The disciplines from which concepts were selected for this investigation included economics, science, and geography. The process of selecting appropriate concepts for the kindergarten involved the following: (1) a general review of the major concepts in the subject fields through a review of publications from scholarly and learned societies; (2) delimiting major ideas with consultant assistance; (3) preparing concrete and sequential experience related specifically to each concept; and (4) preparing suitable language experiences.

Twenty-nine prereading language understandings were enumerated by the writer to make the conceptual-language teacher aware of the sequence of language development.[1] This sequence enabled the teacher to integrate language activities with the concepts, to provide a means for diagnosing levels of verbal development, and to assure systematic and specific consideration of understandings that are essential to subsequent success in reading.

Description of the Community

The community containing the classrooms involved in the study is a small urban community with a population of 18,695.[2] Sixty-four per cent of the citizens are French-speaking Americans. The area is served by a small junior college and by Colby College.

Description of the School Districts

Information on the cooperating school district is found in Table 1.

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[1] Lesson plans for the conceptual-language classes have been published and are available from the Maine State Department of Education, Augusta.

[2] U. S., Department of Commerce, Bureau of the Census, United States Census Population: 1960, General Social and Economic Characteristics, Maine.

TABLE 1

ELEMENTARY SCHOOL DATA

Instruction Variables	Allotments
Length of Kindergarten School Day	2 1/2 hours
Length of School Year	180 days
Number of Kindergarten Rooms in District	7
Average Daily Membership Cost per Pupil K-8	$340.17

Description of the Teachers

The two teachers involved in the experiment were female; one was married. They both held "professional standard" teaching certificates for Maine. One had earned a lifetime certificate.

Both teachers had bachelor's degrees in elementary education with majors in kindergarten-primary methods. Neither had a master's degree; however, each had taken a number of courses at the graduate level. The conceptual-language teacher had a total of 35 years teaching experience, of which 19 years were with kindergarten children. The teacher of the basal groups had taught six years in the kindergarten.

Description of Sample

At the beginning of the study there were 79 enrolled in the cooperating classrooms. Seventy-eight were in attendance at the end of the instructional period. The average class size for all groups was 20.

Further information on the sample of this study is contained in the analysis of data in Chapter IV.

CHAPTER IV

ANALYSIS OF DATA

This investigation was designed to test the effectiveness of two methods of instruction in developing reading readiness in the kindergarten. The results of this study are presented in this chapter. Discussion of these results, along with recommendations for further research and implications for education practices, will be found in the final chapter.

The statistical methods used for the investigation included an analysis of variance on all pre-experimental measures and an analysis of covariance on post-test measures whenever assumptions could be met through tests of significance for equality of group regression co-efficients. The .05 level of confidence was established by the investigator as a basis for ascertaining statistical significance. The analysis of covariance was used to increase the precision of the analysis rather than to correct for pre-experimental differences. Means, adjusted means, and standard deviations are given for all the analysis. Medians and modes were done for teacher ratings of pupil adjustment. A Pearson Product-Moment correlation co-efficient was computed on 24 variables.

Analysis of Pre-Experimental Status

An analysis of variance of the treatment group chronological ages reveals no significant differences between the groups. An examination of Table 2 indicates that the group means for September 1, 1967, chronological ages were less than one month apart for both groups.

TABLE 2

ANALYSIS OF VARIANCE OF SEPTEMBER TREATMENT GROUP CHRONOLOGICAL AGES

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	6.19	1	6.19	.55	NS
Within Groups	851.62	76	11.21		
Total	857.81	77			

TABLE 2 (Cont.)

ANALYSIS OF VARIANCE OF SEPTEMBER TREATMENT GROUP CHRONOLOGICAL AGES

	Means	Standard Deviations
Basal Classes:	63.67	3.21
Concept-Language Classes:	64.23	3.48

The *Wechsler Intelligence Scale for Preschool and Primary Children* was individually administered to all pupils during the instructional period. The test has 12 subtests which yield verbal, performance, and full scale scores. The reported reliability coefficients for the full scale test range from .95 to .97. Table 3 shows no significant differences between the treatment groups.

TABLE 3

ANALYSIS OF VARIANCE OF *WECHSLER INTELLIGENCE* FULL SCALE, VERBAL, AND PERFORMANCE SCALE TEST SCORES

	Source of Variation	Sum of Squares	df	Mean Squares	F
Full Scale	Between Groups	316.13	1	316.13	.77
	Within Groups	31241.06	76	411.07	
Verbal	Between Groups	19.56	1	19.56	.16
	Within Groups	9239.63	76	121.57	

TABLE 3 (Cont.)

ANALYSIS OF VARIANCE OF WECHSLER INTELLIGENCE FULL SCALE, VERBAL, AND PERFORMANCE SCALE TEST SCORES

Performance	Between Groups	175.50	1	175.50	1.42
	Within Groups	9421.50	76	123.97	

The means and standard deviations for the Wechsler Intelligence Scale for Preschool and Primary Children are reported in Table 4.

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR WECHSLER INTELLIGENCE TEST FULL SCALE, VERBAL AND PERFORMANCE RAW TEST SCORES

	Basal Classes		Conceptual-Language Classes	
	Mean	Standard Deviation	Mean	Standard Deviation
Full Scale	103.56	21.69	107.59	18.75
Verbal	53.08	11.97	54.08	9.99
Performance	50.51	11.69	53.51	10.55

The Metropolitan Reading Readiness Test, Form A was administered to all pupils in small groups in October, 1967. The subtests include measures of word meaning, listening, matching, alphabet, numbers and copying. Reported reliability coefficients for the various subtests range from .69 to .81 with the total-score coefficient given as .91. Congruent validity on the correlations of the Metropolitan Readiness subtests and total scores with scores on the Murphy-Durrell Reading Readiness Analysis is .80. Predictive validity measures were not available.

Inspection of Table 5 shows that the conceptual-language classes had significantly higher scores on the matching and copying sections of the Metropolitan Readiness Test, Form A. No significant differences in total test scores were obtained.

TABLE 5

ANALYSIS OF VARIANCE OF METROPOLITAN READINESS TEST FORM A PRE-TEST SCORES

	Mean Square Between	df	Mean Square Within	df	F	P
Word Meaning	5.13	1	10.25	76	.50	NS
Listening	3.71	1	7.21	76	.51	NS
Matching	43.13	1	7.27	76	5.93	.05
Alphabet	5.65	1	16.54	76	.34	NS
Numbers	.01	1	12.92	76	.00	NS
Copying	29.54	1	6.47	76	4.56	.05
Totals	223.37	1	172.91	76	1.29	NS

The means and standard deviations for the Metropolitan Readiness Test, Form A are given in Table 6. Significant differences were observed in the matching and copying subtests.

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR METROPOLITAN READINESS TEST FORM A PRE-TEST SCORES

	Basal Classes		Conceptual-Language Classes	
Subtests	Mean	Standard Deviation	Mean	Standard Deviation
Word Meaning	6.72	3.66	7.23	2.66
Listening	7.56	3.16	8.00	2.10
Matching	2.74	2.68	4.23	2.70*
Alphabet	5.18	4.58	4.64	3.48
Numbers	6.82	3.75	6.79	3.43
Copying	1.72	1.97	2.95	3.01*
Total	30.46	14.29	33.85	11.90

* Significant at .05 level

The Gesell School Readiness Test was individually administered to pupils in both treatments. The test classifies children by behavorial ages ranging from 4B to 5½A. For the purpose of the investigation, pupils with developmental scores less than 5 years were considered immature and those above were given mature ratings. The test of association reported in Table 7 indicates that there were no significant differences between the treatment in maturity ratings. Reliability and validity correlation co-efficients tests were not available for the Gesell Test.

TABLE 7

TEST OF ASSOCIATION FOR GESELL SCHOOL READINESS MATURITY RATINGS

	Gesell Maturity Ratings		
	Immature	Mature	Totals
Basal Classes	23	16	39
Conceptual-Language Classes	17	22	39
Totals	40	38	78

- 1.28 nonsignificant

The Wepman Auditory Test, Form I is an individually administered oral test consisting of 40 items, comprising of three-to-five letter word pairs of the vowel-consonant-vowel variety. The vowel sound is identical in 30 of the word pairs. Inadequate auditory discrimination is indicated when 5-year-olds have more than 7 errors. The reported reliability correlation coefficient is .91. The information on the relation between test results and intelligence, articulatory disorders, and reading disability is reported as indicators of validity. Table 8 reveals no significant differences between the groups on Wepman Auditory Test scores.

TABLE 8

ANALYSIS OF VARIANCE OF WEPMAN AUDITORY, FORM I PRE-TEST ERROR SCORES

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	41.66	1	41.66	1.01	NS
Within Groups	3126.30	76	41.14		
Total	3167.96	77			

TABLE 8 (Cont.)

ANALYSIS OF VARIANCE OF WEPMAN AUDITORY, FORM I PRE-TEST ERROR SCORES

	Mean	Standard Deviation
Basal Classes	8.85	6.48
Conceptual-Language Classes	7.38	6.34

The final pre-experimental test was the visual subtest of the Allyn and Bacon Pre-Reading Test, Form I. This test measures childrens' ability to distinguish among word forms. The visual discrimination subtest has a reliability coefficient of .96, the total-score coefficient is .94. Neither content, congruent, or predictive validity measures are available. Table 9 reveals no significant differences between the treatments on visual discrimination of word forms.

TABLE 9

ANALYSIS OF VARIANCE ALLYN AND BACON PRE-READING TEST, VISUAL SUBTESTS FORM I SCORES

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	14.82	1	14.82	.56	NS
Within Groups	2014.67	76	26.51		
Total	2029.49	77			

	Mean	Standard Deviation
Basal Classes	7.62	5.32
Conceptual-Language Classes	6.74	4.97

Analysis of Post-Experiment Test Results

After an instructional period of 116 days, four tests measuring reading readiness skills were administered to 78 pupils in two classrooms. The first of these was the Metropolitan Reading Readiness Test, Form B, which was the principal instrument used for measuring reading readiness achievement in this study. The test contains six subtests:

1. Word Meaning
2. Listening
3. Matching
4. Alphabet
5. Numbers
6. Copying

The Word Meaning section consists of 16 items and requires the pupil to select from three pictures. The Listening test measures the ability to comprehend phrases and sentences. The Matching section is a measure of visual perception. The Alphabet test consists of 16 lower-case letters of the alphabet. The Numbers test includes a general test of number knowledge. The Copying section measures visual perception and motor control. The reported reliability coefficients for the six subtests of the Metropolitan Reading Readiness, Form B range from .66 to .86 with a total-score coefficient of .91. Congruent validity of the tests with the Murphy-Durrell reveals close agreement on the relative ranking of pupils .80.

Group regression coefficients were computed for Metropolitan Readiness Tests Form B on Form A to determine whether the slopes differed significantly. The application of the analysis of covariance assumes that the regression lines for the various treatment groups have a common slope. Tests of significance of differences between the group regression coefficients are shown in Table 10. When significant F values were obtained, the post-test scores were analyzed by means of analysis of variance.

TABLE 10

TESTS OF SIGNIFICANCE OF THE EQUALITY OF GROUP REGRESSION COEFFICIENTS OF THE METROPOLITAN READINESS TEST, FORM B ON FORM A

	Beta Weights			
Subtests	Basal Classes	Conceptual Classes	F(1,75)	P
Word Meaning	.74	.49	1.36	NS
Listening	.36	-.09	3.75	.10
Matching	.41	.45	.02	NS
Alphabet	.72	.15	7.28	.01
Numbers	.79	.62	.69	NS
Copying	.79	.66	.23	NS
Total Score	1.08	.83	2.28	NS

The subtest scores of the Metropolitan Readiness Test, Form B are presented in Tables 11 and 12. Since significant differences were noted in the regression lines for the Alphabet and Listening subtests, an analysis of variance was used to compare differences between the treatments on these measures.

Table 11 shows no significant differences between treatment group means on the Listening and Alphabet subtests.

TABLE 11

ANALYSIS OF VARIANCE OF THE LISTENING AND ALPHABET METROPOLITAN READINESS TEST, FORM B POST-TEST SCORES

Subtest	Source of Variation	Sum of Squares	df	Mean Square	F	P
Listening	Between Groups	.63	1	.63	.09	NS
	Within Groups	514.41	76	6.77		
Alphabet	Between Groups	43.13	1	43.13	2.39	NS
	Within Groups	1372.05	76	18.05		

An analysis of covariance was used to test differences between the Metropolitan Readiness Test, Form B post-test means adjusted for Form A pre-test means on four subtests and the total score. When the initial pre-test differences favoring the conceptual-language classes on the Matching and Copying sections were held constant, no significant differences were noted between the treatments. The total score favored the conceptual-language classes at the .05 level of confidence.

Table 12 contains the results of the analysis of covariance of selected treatment group means.

TABLE 12

ANALYSIS OF COVARIANCE ON SELECTED METROPOLITAN READINESS TEST, FORM B SCORES

	Source of Variation	Sum of Square	df	Mean Square	F	P
Word Meaning	Between Groups	.60	1	.60	.07	NS
	Within Groups	627.57	75	8.37		
Matching	Between Groups	4.34	1	4.34	.27	NS
	Within Groups	1187.29	75	15.83		
Numbers	Between Groups	39.79	1	39.79	3.61	NS
	Within Groups	826.66	75	11.02		
Copying	Between Groups	9.74	1	9.74	1.24	NS
	Within Groups	588.25	75	7.84		
Total Score	Between Groups	372.17	1	372.17	4.12	.05
	Within Groups	6777.83	75	90.37		

The means and standard deviations for the treatment groups, Metropolitan Readiness Test, Form B test scores are presented in Table 13. Inspection of this data reveals that the conceptual-language classes had slightly higher subtest scores. The significant differences in the total score between the groups resulted from the gradual accumulation of difference in the subtest scores.

TABLE 13

MEANS AND STANDARD DEVIATIONS
FOR METROPOLITAN READINESS TEST, FORM B
SUBTEST SCORES

	Basal Classes		Conceptual-Language Classes	
	Mean	Standard Deviations	Mean	Standard Deviations
Word Meaning	9.05	3.81	9.56	3.29
Listening	10.33	2.94	10.51	2.21
Matching	8.20	4.87	9.33	3.18
Alphabet	11.15	4.77	12.64	3.65
Numbers	10.64	4.51	12.05	3.81
Copying	4.98	3.43	6.53	3.16
Total Score	53.17	18.61	60.89	12.77

Table 14 shows the means for selected subtests of Metropolitan Readiness Test, Form B adjusted for Form A.

Table 14

MEANS FOR SELECTED SUBTESTS OF THE METROPOLITAN READINESS TEST, FORM B ADJUSTED FOR FORM A

	Adjusted Means	
Subtests	Basel Classes	Conceptual-Language Classes
Word Meanings	9.22	9.40
Matching	8.52	9.01
Numbers	10.63	12.06
Copying	5.38	6.11
Total Score	54.84	59.24

Tests of significance of differences between the group regression coefficients were computed for the Allyn and Bacon Pre-Reading visual subtest and the Wepman Auditory Forms I and II. Since a significant F value was observed for the regression slope of the Pre-Reading visual subtests, Form II on I, an analysis of variance was used to analyze post-test differences between the treatment groups on this variable.

Table 15 contains the tests of significance of the equality of group regression coefficient for the Allyn and Bacon Pre-Reading visual subtests Form II on I and the Wepman Auditory Test Forms II on I.

TABLE 15

TESTS OF SIGNIFICANCE OF THE EQUALITY OF GROUP REGRESSION COEFFICIENTS FOR THE ALLYN AND BACON PRE-READING VISUAL SUBTESTS AND THE WEPMAN AUDITORY TESTS FORMS I AND II

	Beta Weights			
	Basal Classes	Conceptual-Language Classes	F(1,75,df)	P
Pre-Reading Visual Subtests Forms II on I	.82	.29	4.86	.05
Wepman Auditory Forms II on I	.47	.37	.26	NS

Inspection of Table 16 reveals that the conceptual-language classes had significant visual discrimination scores at the .01 level of confidence. The loss of analysis of covariance was not a limitation because initial pre-test scores indicated no need to correct an initial bias between the treatment groups.

Table 16 contains the analysis of variance of the Allyn and Bacon Pre-Reading visual subtests.

TABLE 16

ANALYSIS OF VARIANCE OF THE ALLYN AND BACON PRE-READING VISUAL SUBTESTS FORM II

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	487.50	1	487.50	12.61	.01
Within Groups	2937.49	76	38.65		
Total	3424.99	77			

	Mean	Standard Deviation
Basal Classes	9.51	6.81
Conceptual-Language Classes	14.51	5.57

The Wepman Auditory pre- and post-test scores were analyzed to determine differences between the treatment groups. Table 17 reveals that there were no significant differences between the treatment groups.

Table 17 contains the analysis of covariance for the Wepman Auditory Tests scores, Form II adjusted for Form I for both treatment groups.

TABLE 17

ANALYSIS OF COVARIANCE FOR THE WEPMAN AUDITORY FORM II POST-TEST SCORES ADJUSTED FOR FORM I PRE-TEST

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	24.47	1	24.47	.98	NS
Within Groups	1874.08	75	24.99		
Total	1898.55	76			

	Adjusted Means
Basal Classes	4.82
Conceptual-Language Classes	5.95

The letter names subtests of the Murphy-Durrell Reading Readiness Analysis was administered to the treatment groups at the end of the investigation. Spearman-Brown reliability coefficients for the letter names tests range from .94 to .90 with .98 for the total test. Correlations between the Murphy-Durrell Reading Readiness Analysis and the Stanford Achievement test indicates predictive validity correlations ranging from .38 to .65. Inspection of Table 18 reveals no significant difference between the groups in knowledge of upper and lower case letter names.

Table 18 shows the pre-test analysis of variance for the treatment groups knowledge of letter names.

TABLE 18

ANALYSIS OF VARIANCE OF THE ALLYN AND BACON PRE-READING AUDITORY DISCRIMINATION FORM II SUBTESTS

Source of Variation	Sum of Squares	df	Mean Square	F	P
Between Groups	1.28	1	1.28	.05	NS
Within Groups	1854.52	76	24.40		
Total	1855.80	77			

	Means	Standard Deviation
Basal Classes	14.18	5.52
Conceptual-Language Classes	13.92	4.27

The letter names subtests of the Murphy-Durrell Reading Readiness Analysis was administered to the treatment groups at the end of the investigation. Inspection of Table 19 reveals no significant differences between the groups in knowledge of upper and lower case letter names.

Table 19 shows the post-test analysis of variance for the treatment groups knowledge of letter names.

TABLE 19

ANALYSIS OF VARIANCE OF THE TREATMENT GROUP MEANS FOR THE MURPHY-DURRELL READING ANALYSIS, LETTER NAME SUBTESTS

Source of Variation	Sum of Square	df	Mean Square	F	P
Between Groups	280.81	1	280.81	1.99	NS
Within Groups	10741.06	76	141.33		
Total	11021.87	77			

	Mean	Standard Deviation
Basal Classes	38.87	14.08
Conceptual-Language Classes	42.67	9.19

The interaction effects of a number of different variables were analyzed for the treatment groups, using the Metropolitan Readiness Test Form B as the dependent variable with Form A as the covariate. In some instances, pupils were randomly discarded to achieve proportional cell sizes for the different analysis.

The interaction of treatment and chronological age was computed to determine the performance of younger and older children in the treatments. Chronological age was established by the child's age as of September 1. Pupils who were 64 months or under were placed in the younger group and those 65 months or over were placed in the older category. Inspection of Table 20 reveals no significant interaction between chronological age and treatment.

TABLE 20

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent variables: (I) Treatment
(J) Chronological Age

Dependent variables: (1) Metropolitan Readiness Test, Form B

Covariate: Metropolitan Readiness Test, Form A

Sources of Variation	df	Sum of Squares	Mean Square	F	P
Treatment	1	290.64	290.64	3.02	.10
Chronological Age	1	.39	.39	.00	NS
Interaction - I X J	1	1.51	1.51	.01	NS
Within Subgroups	67	6436.61	96.07		
Totals	70	6729.16			

Adjusted Means

		Old	Young
Treatment			
Basal	54.76	55.0	54.6
Conceptual	58.85	58.7	58.9
Chronological Ages			
Old	56.89		
Young	56.74		

The interaction effects of treatment and age were analyzed when intelligence and Metropolitan Reading Test, Form A scores were held constant. Table 21 reveals that older pupils achieve significantly more adjusted reading readiness than younger pupils irrespective of the treatment groups.

Table 21 shows the interaction effects between treatment groups and pupils of different chronological ages adjusting for intelligence and Metropolitan Readiness Form A pre-test scores.

TABLE 21

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Treatment
(J) Chronological Age

Dependent Variables: (1) *Metropolitan Reading Readiness Test*, Form B

Covariate: *Wechsler Preschool and Primary Intelligence Scale*
Metropolitan Readiness Test Form A

Source of Variation	df	Sum of Squares	Mean Square	F		
Treatment	1	345.61	345.61	5.49	P	.05
Chronological Age	1	450.13	450.13	7.16	P	.01
Interaction - I X J	1	.07	.07	.00		NS
Within Subgroup	66	4151.46	62.90			
Total	69	4947.27				

Adjusted Means

		Old	Young
Treatment			
Basal	54.57	57.9	52.9
Conceptual-Language	59.04	62.3	56.6
Chronological Ages			
Over 65 Months	60.13		
Under 65 Months	54.43		

The question of whether pupils of different maturity ratings do better in the conceptual-language or basal reader classes was examined. Pupils who had Gesell School Readiness Test scores under 5 on October 15, 1967, were classified as immature. Pupils with ratings of 5 or above were placed in the mature group. Table 22 indicates that maturity ratings do not interact with the treatments. Immature pupils do as well as mature pupils regardless of the method.

Table 22 shows the interaction effects between treatment and maturity.

TABLE 22

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Treatment
(J) Maturity

Dependent Variable: Metropolitan Readiness Test, Form B

Covariate: Metropolitan Readiness Test, Form A

Source of Variation	df	Sum of Squares	Mean Square	F	P
Treatment - I	1	235.11	235.11	2.39	NS
Maturity - J	1	117.56	117.56	1.20	NS
Interaction - I X J	1	72.49	72.49	.74	NS
Within Subgroups	59	5793.45	98.19		
Totals	62	6218.61			

Adjusted Means

Treatments	
Basal	55.68
Conceptual-Language	59.51
Maturity Levels	
Immature	56.08
Mature	59.11

Immature	Mature
53.0	58.2
59.0	59.9

The interaction effects of chronological age and maturity were examined using Form B of the Metropolitan Readiness Test adjusted for Form A as a covariate. There was no significant interaction between the chronological age and maturity. Table 23 shows these data.

TABLE 23

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Chronological Age
(J) Maturity

Dependent Variable: Metropolitan Readiness Test, Form B

Covariate: Metropolitan Readiness Test, Form A

Source of Variation	df	Sum of Squares	Mean Square	F	P
Chronological Age - I	1	1.34	1.34	.01	NS
Maturity - J	1	204.60	204.60	2.02	NS
Interaction - I X J	1	50.68	50.68	.50	NS
Within Subgroups	41	4162.29	101.52		
Totals	44	4418.89			

Adjusted Means

		Immature	Mature
Chronological Age			
Over 65 Months	60.13	55.6	62.9
Under 65 Months	60.48	58.6	61.6
Maturity Levels			
Immature	57.16		
Mature	62.32		

The question of interaction between sex and treatment was explored. There was no significant differences in favor of either boys or girls in any of the treatments. Table 24 shows the interaction effects between treatment and sex.

TABLE 24

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Treatment
(J) Sex

Dependent Variable: *Metropolitan Readiness Test*, Form B

Covariate: *Metropolitan Readiness Test*, Form A

Souce of Variation	df	Sum of Squares	Mean Square	F	P
Treatment - I	1	425.37	425.37	4.58	.05
Sex - J	1	188.94	188.94	2.03	NS
Interaction - I X J	1	92.80	92.80	1.00	NS
Within Subgroups	63	5856.59	92.96		
Totals	66	6563.70			

Adjusted Means

		Boys	Girls
Treatments			
Basal	55.22	58.0	52.3
Conceptual-Language	60.31	60.8	59.8
Sex			
Boys	59.43		
Girls	56.09		

Significant interaction effects were observed between treatment and intelligence when the dependent variable Form A of the Metropolitan Readiness Test was adjusted for Form B. Pupils were divided into 3 groups for analysis. Children with I.Q. scores of 89 or less were classified as below average; between 90 and 109 as average; and above 110 as high. Inspection of Table 25 reveals that high and average pupils in the conceptual-language classes had moderate significance in their favor. The difference is most pronounced, however, with the low ability pupils who had post-test adjusted means 22 points higher than the basal reader pupils of comparable ability.

Table 25 shows the interaction between intelligence and treatment.

TABLE 25

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Treatment
(J) Intelligence

Dependent Variable: Metropolitan Readiness Test, Form B

Covariate: Metropolitan Readiness Test, Form A

Source of Variation	df	Sum of Squares	Mean Square	F	P
Treatment - I	1	443.27	443.27	7.16	.01
Intelligence - J	2	1191.57	595.79	9.63	.01
Interaction - I X J	2	611.85	305.92	4.94	.05
Within Subgroups	65	4023.42	61.90		
Totals	70	6270.11			

Adjusted Means

Treatments	
Basal	54.80
Conceptual-Language	59.81

High	Average	Low
61.89	54.57	32.89
65.28	57.19	54.49

Intelligence	
110 and Above	63.58
90 to 109	55.88
89 and Below	43.69

Basal:
Conceptual-Language:

Table 26 shows the interaction effects between social economic status and treatment. On the basis of 1960 Maine census data, children were placed in three social-ecomomic groups: below average, average, and above average. The criteria for classification included occupation of parents, educational attainment, and general verbal stimulation found in the home. The writer recognizes the limitations involved in the classifying of pupils into discrete categories. No significant interactions were noted between social-economic status and performance in the treatments.

Table 26 contains the interaction effects of treatment and social economic status for the treatment groups.

TABLE 26

TWO-FACTOR ANALYSIS OF COVARIANCE

Independent Variables: (I) Treatment
(J) Social Economic Status

Dependent Variable: Metropolitan Readiness Test, Form B

Covariate: Metropolitan Readiness Test, Form A

Source of Variation	df	Sum of Squares	Mean Square	F	P
Treatment - I	1	303.79	303.79	3.81	.10
Social Economic - J	2	410.63	205.32	2.57	NS
Interaction - I X J	2	158.33	79.16	.99	NS
Within Subgroups	61	4866.34	79.78		
Totals	66	5739.09			

Adjusted Means

Treatments		Below	Average	Above
Basal	55.22	50.06	54.26	59.61
Conceptual-Language	59.46	60.86	56.81	62.78
Social-Economic Ratings				
Below	55.46			
Average	55.54			
Above-Average	61.14			

An attempt was made during the investigation to observe pupils in the two treatments for any manifestations of deleterious social behavior or adjustment problems. The treatment group teachers used a four point rating scale to make 3 independent judgments on each pupil at the beginning, midway through, and at the conclusion of the study. The writer recognizes the limitations of asking classroom teachers to rate their own pupils.

The first rating involved an 8-point scale for the over-all classroom work: the lower the numerical value of the rating, the more satisfactory the adjustment and behavior. Table 27 gives the medians and modes for the November, February and May ratings of classroom work. Inspection of the Table 27 reveals little variation between and within treatment group ratings. A value of 3 means "Completes assigned work, but is capable of higher level work." The May rating medians are within the 3 range; although more pupils in the basal classes were given a 5 score: "Does only enough to satisfy minimum requirements."

TABLE 27

MEDIANS AND MODES OF TEACHER NOVEMBER, FEBRUARY, AND MAY RATINGS OF PUPIL OVER-ALL CLASSROOM WORK

	November Rating		February Rating		May Rating	
	Median	Mode	Median	Mode	Median	Mode
Basel Classes (N=39)	3.4	3.0	3.2	3.0	3.8	5.0
Conceptual-Language Classes (N=39)	3.3	3.0	3.2	3.0	3.0	3.0

Teachers were asked to rate the over-all classroom behavior of their pupils. The scale consists of 6 categories progressing from "well-behaved" to "disturbing behavior." Inspection of Table 28 reveals a consistent rating of 1 by the basal teacher. The conceptual-language teacher gave more of her pupils 3 ratings "Accepts regulations, occasionally violates minor rules." There was a tendency, however, toward more satisfactory ratings, as the year progressed.

TABLE 28

MEDIANS AND MODES OF TEACHER NOVEMBER, FEBRUARY, AND MAY RATINGS OF PUPIL OVER-ALL CLASSROOM BEHAVIOR

	November Rating		February Rating		May Rating	
	Median	Mode	Median	Mode	Median	Mode
Basal Classes (N=39)	1.1	1.0	1.1	1.0	1.2	1.0
Conceptual-Language Classes (N=39)	3.0	3.0	1.5	3.0	1.4	3.0

Adjustment of children to other children was the third observation made by the teachers. An examination of Table 29 indicates a consistent pattern throughout the study. The conceptual-language teacher gave more satisfactory ratings: "Accepted by students of both sexes." The basal teacher assigned a satisfactory, but a slightly qualified judgement: "Accepted by most fellow pupils."

TABLE 29

MEDIANS AND MODES OF TEACHER
NOVEMBER, FEBRUARY, AND MAY RATINGS
OF PUPIL ADJUSTMENT TO OTHER CHILDREN

	November Rating		February Rating		May Rating	
	Median	Mode	Median	Mode	Median	Mode
Basal Classes (N=39)	3.1	3.0	2.8	3.0	2.3	2.0
Conceptual-Language Classes (N=39)	1.2	1.0	1.2	1.0	1.6	1.0

The participation of pupils in classroom social activities was assessed by both treatment group teachers. Inspection of Table 30 indicates practically no difference in the judgments of the teachers. Both teachers gave their pupils satisfactory ratings, "Normal social participation." Table 30 shows the medians and modes of teacher November, February, and May ratings of pupil social participation.

TABLE 30

MEDIANS AND MODES OF TEACHER
NOVEMBER, FEBRUARY, AND MAY RATINGS
OF PUPIL SOCIAL PARTICIPATION

	November Rating		February Rating		May Rating	
	Median	Mode	Median	Mode	Median	Mode
Basal Classes (N=39)	3.7	2.0	2.2	2.0	3.5	2.0
Conceptual-Language Classes (N=39)	3.6	2.0	3.6	2.0	2.2	2.0

The four measures of pupil adjustment revealed only slight disparities between the teachers in their ratings. There was no observable evidence to suggest that as the year progressed children in either of the treatments exhibited undesirable forms of social behavior of lack of adjustment to school.

Concept and Group Verbal Tests

The standardized instruments used in the study were not sensitive measures of the content and methods emphasized in the conceptual-language classes. Several informal tests were devised by the investigator in an attempt to obtain data on the cognitive process and verbal facility of pupils in each treatment. By means of a table of random numbers, numbers of subsamples were drawn from each treatment and presented with problems in individual and group settings. Pupil responses were recorded on audio tape and tabulated for analysis.

Concept Tests

The first question concerned whether young children could understand, assimilate, and apply basic principles after exposure to a number of activities related to the concepts. Two concept tests were constructed using materials and objects known to the children. Each test was administered individually before and after instruction in content. Pupils in the basal classes were used as a control group.

Science Concept Test I involved four problems related to the study of matter. Pupils were given materials and allowed to examine and manipulate them. The tasks included noting likenesses and differences; detecting similarities among different objects; and grouping things by common characteristics, such as color, shape, texture, and function.

Inspection of Table 31 reveals that there were no significant differences on the pre-test scores between the groups on Science Concept Test I. The post-test mean scores favor the conceptual-language classes at the .05 level of confidence.

TABLE 31

t TESTS FOR PRE AND POST SCIENCE CONCEPT TEST I MEAN SCORES

	Basal Classes (N=10)		Conceptual-Language Classes (N=9)			
	Mean	SD	Mean	SD	diff	*t*
Pre-test	7.6	4.3	9.5	6.8	1.9	.70
Post-test	9.8	4.9	15.4	8.1	5.6	2.43*

* P .05

Science Concept Test II was individually administered approximately midway through the investigation. The problems involved differentiating among forms of energy such as pushing and pulling; resistance, and magnetism. Random subsamples were drawn from both treatments approximately midway through the study and given *Science Concept Test* II. An examination of Table 32 indicates that the conceptual-language classes had a significant difference on the pre-test performance tasks at the .05 level of confidence. The post-test scores again favor the conceptual-language classes at a higher level of confidence. The results raise the question whether or not after 15 weeks of instruction pupils in the conceptual classes had acquired a cognitive style for attaching performance type problems. Table 32 shows *t* tests for pre- and post-*Science Concept Test* II mean scores.

TABLE 32

t TEST FOR PRE AND POST *SCIENCE CONCEPT* TEST II SCORES

	Basal Classes (N=12)		Conceptual-Language Classes (N=13)			
	Mean	SD	Mean	SD	diff	t
Pre-test	9.1	3.3	10.8	4.4	1.7	1.83*
Post-test	10.3	2.7	13.1	4.1	2.8	3.51**

* P .05
** P .01

An analysis of the tape recordings made during the individual pre- and post-science testing situations did not indicate any pronounced differences between the treatment groups in verbal output and quality of responses. The test situations involved discrete tasks and therefore did not permit many opportunities for interaction. Pupils were scored on the accuracy of their answers.

Group Verbal Tests.

Throughout the investigations pupils in the conceptual-language classes were encouraged to pursue tasks that require considerable self-selection, cooperation, and verbalization. Four matched groups of five children were drawn from the treatments and presented with problems that required them to share insights and to work together to complete an assignment. Pupil responses to open-ended questions were recorded on audio tape and analyzed to determine the degree of group participation, number of different responses, the relationship among ideas, and the sharing or pooling of information.

The groups were matched on the basis of Wechsler Intelligence ratings and chronological ages. Children in the high ability groups had I.Q. scores ranging from 115-121 and September 1 chronological ages of 65 months and over. Pupils in the average groups had intelligence ratings between 100-105 and chronological ages comparable to high ability sections.

The first problem involved showing each group a magazine cover with a large pie-shaped map like the United States. The children were asked, "What is it?" None of the pupils in the basal groups was able to identify the shape as a map. All of the pupils in the conceptual-language groups participated in the discussion. An inspection of Table 33 reveals that the number of pupils participating, total number of responses, and number of different ideas are larger in the conceptual-language classes for all ability levels.

TABLE 33

FREE VERBAL RESPONSES OF AVERAGE AND HIGH ABILITY PUPILS TO AN ILLUSTRATION

	Basal Reader Classes		Conceptual-Language Classes	
	High Ability (N=5)	Average Ability (N=5)	High Ability (N=5)	Average Ability (N=5)
Number of Participants	4	3	5	5
Number of Responses	5	3	14	15
Number of Different Ideas	3	1	8	9
Totals	12	7	27	29

The second task involved giving each child two pieces of a puzzle and instructing the group to work together to make the puzzle. Table 34 shows that all of the conceptual-language pupils participated in the undertaking and were able to complete more pieces of the puzzle as a group than the basal reader classes. A lack of cooperation was observed in the basal groups.

TABLE 34

COOPERATION OF AVERAGE AND HIGH ABILITY PUPILS IN A GROUP ASSEMBLY TASK

	Basal Reader Classes		Conceptual-Language Classes	
	High Ability (N=5)	Average Ability (N=5)	High Ability (N=5)	Average Ability (N=5)
Number of Participants	4	3	5	5
Number of Pieces Completed	2	2	10	6
Totals	6	5	15	11

The third problem involved showing each group a large picture. Pupils were instructed to look at the drawing and make-up stories. Groups were rated on the basis of participation, total number of responses, different responses, and stories not directly related to the illustration. The conceptual-language groups all participated in the discussions and contributed more responses than the basal reader classes. The number of different responses and stories not directly related to the illustration was greater for the conceptual-language classes, particularly for the average ability pupils. Table 35 shows these data.

TABLE 35

FREE VERBAL RESPONSES OF AVERAGE AND HIGH ABILITY PUPILS TO A VISUAL

	Basal Reader Classes		Conceptual-Language Classes	
	High Ability (N=5)	Average Ability (N=5)	High Ability (N=5)	Average Ability (N=5)
Number of Participants	4	5	5	5
Number of Responses	12	13	19	7
Number of Different Responses	12	11	13	14
Number of Stories Not related to Illustration	3	2	4	7
Totals	31	31	41	43

A fourth problem required pupils to pool materials and to share information. Ten sticks of wood were distributed unequally to pupils in each group. They were asked to divide the pieces so that everyone would have the same number. Pupils in both conceptual-language classes pooled their pieces and attempted to solve the problem cooperatively. The high ability conceptual-language group successfully divided the pieces equally. In the basal sections, one child in the average group and two pupils in the high ability group worked independently.

Neither group was able to solve the problem. The most pronounced observed difference between the treatments was the lack of group interaction and sharing of data in the basal classes.

Correlations Between Pre-and Post Experiment Measures

A Pearson Product-Moment correlation matrix was computed on 24 variables. This matrix is presented in Table 36 and contains correlation coefficients between pre-tests and post-tests.

TABLE 36

CORRELATION MATRIX[a]

	Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Metro A Word		43	20	39	41	20	66	43	36	32	59	49	46	31	40	45	60	32	25	30	63	43	58	30
2	Metro A Listen			16	29	37	17	57	24	44	34	35	23	33	31	37	33	46	32	30	32	35	42	42	31
3	Metro A Match				43	32	40	60	45	53	35	31	23	30	39	37	44	47	27	31	30	43	44	48	44
4	Metro A Alpha					62	37	80	60	46	49	49	40	35	47	57	46	62	42	50	47	52	56	59	42
5	Metro A Numb						44	79	57	44	56	46	49	52	28	60	53	67	41	51	47	63	67	71	56
6	Metro A Copy							60	38	32	32	26	22	26	26	45	57	47	35	39	39	38	51	49	67
7	Metro A Total								67	62	60	61	53	53	50	68	67	81	51	55	55	73	75	81	65
8	A & B Vis I									40	45	32	29	43	43	56	38	56	35	41	39	63	51	62	40
9	A & B Vis II										51	34	27	48	36	52	46	59	39	47	45	38	57	52	42
10	A & B Aud											43	40	40	50	55	43	63	59	58	61	53	63	63	41
11	Metro B Word												53	44	39	41	41	71	43	44	45	55	59	62	34
12	Metro B Listen													24	29	30	32	60	35	35	36	60	46	58	37
13	Metro B Match														33	58	60	72	45	50	49	46	51	53	44
14	Metro B Alpha															54	39	68	72	70	73	47	51	54	32
15	Metro B Numb																62	81	58	59	61	59	59	65	50
16	Metro B Copy																	76	43	59	55	56	62	64	57
17	Metro B Total																		69	74	74	74	77	82	60
18	Dur-Mur Let C																			87	97	47	55	56	45
19	Dur-Mur Let L																				96	48	60	59	47
20	Dur-Mur Total																					49	59	59	48
21	Wech Verb																						67	91	48
22	Wech Per																							92	62
23	Wech Total																								60
24	Goodenough																								

[a] Decimal points omitted to save space

Summary

The pre-experimental analysis included tests of significance between the treatment groups for intelligence, chronological age, visual and auditory discrimination ability, maturity and reading readiness.

The post-test analysis involved a comparison of treatment groups gain in general readiness and perceptual growth. In addition, the interaction effects of treatment, maturity, intelligence, age, sex, and social economic status were made using the Metropolitan Readiness Test, Form A as the covariate. Teacher ratings of pupil adjustment to school during the year were presented.

Four individually administered performance tests involving cognitive tasks were discussed. The results of several groups verbal reaction problems were examined.

A Pearson Product-Moment correlation was computed on 24 variables.

Discussion of the results of the analysis of data and recommendations for educational practice are presented in Chapter V.

CHAPTER V

RESULTS, CONCLUSIONS, AND IMPLICATIONS

The major purpose of this investigation was to assess the effectiveness of an informal concept-centered kindergarten program in promoting general readiness for reading. The sample consisted of two treatment groups involving four kindergarten sections with two teachers, each teaching one method to two classes of children.

Seventy-eight pupils in one school participated in this study during the 1967-68 academic year. Two treatment groups of two classrooms each were formed by randomly assigning each teacher to one of the following pre-reading programs:

1. Conceptual-language program

2. Basal reader approach

The year began with an extensive pre-testing program and concluded with the administration of post-test instruments. The instructional period between pre- and post-testing lasted for 116 days.

Limitations of the Study

The findings of this study need to be interpreted in view of certain limitations:

1. The effectiveness of a kindergarten prereading program can only be measured over a long period of time considering gains in subsequent reading achievement.

2. Selection of the population for study was made on the basis of the proximity and willingness of the school district to participate in the investigation. A limitation of the study, therefore, is that the pupils did not represent a random sample of kindergartens in the State of Maine. This limits any applications that can be drawn from the investigation.

3. The assumptions involving the statistics preclude the possibility of drawing inference from the study to pupils in general. However; the findings are valuable as a indicator of the comparative merit of the separate approaches to reading readiness.

Pre-Experiment Status

A series of five tests was administered to pupils in both treatments before the instructional period. The results of these measures and other information on the sample appear below:

1. No significant differences were noted between chronological age means for the two treatment groups.
2. An intelligence test was individually administered and the analysis of results indicated no differences in ability between groups.
3. A reading readiness test was given and significant differences were noted on two of the seven subtests. These significant differences favored the conceptual-language classes. A test of significance for the total test score revealed no differences between the groups.
4. No significant differences were found on the analysis of the visual subtests of the Allyn & Bacon Pre-Reading Test score.
5. The pre-test scores on the Wepman Auditory Discrimination Test did not favor either treatment.
6. An examination of the maturity ratings for both groups did not reveal any significant differences in the number of mature and immature assigned to either treatment.

Examination of the results indicates that no important differences between groups were present at the beginning of the instructional period.

Post-Experimental Results

The post-experimental measures included a general reading readiness battery, two different auditory discrimination subtests, a test of work forms, and a letter-name test. Form concepts tests were individually administered to random subsamples from each treatment. In addition, four groups of pupils from the classes were matched on the basis of intelligence and given several verbal problems to assess interaction. Teachers completed three independent social adjustment ratings on each child.

The results of these measures and other information collected on the performance of the subtests appear below.

1. The major measure of reading readiness achievement was the Metropolitan Readiness Test, Form B. An analysis of variance on two subtest scores and an analysis of covariance on four subtest scores revealed no significant difference between the treatments on the various subtests. However, an analysis of covariance on total mean scores for both groups showed a significant difference in achievement at the .05 level of confidence in favor of the conceptual-language classes.

2. An analysis of variance on the Allyn & Bacon Pre-Reading Test, Form II visual subtests, revealed a significant difference at the .01 level of confidence for pupils in the conceptual-language group. The total post-test mean scores were 9.51 for the basal group and 14.51 for the conceptual-language classes.

3. The Wepman Auditory Discrimination, Form II, adjusted for Form I, revealed no significant differences between the groups. The adjusted mean scores were 4.82 for the basal group and 5.95 for the conceptual-language classes.

4. No significant differences were noted on the analysis of variance derived from the Allyn & Bacon Pre-Reading, Form II subtest of initial consonants.

5. The Murphy-Durrell Reading Readiness Analysis Test, letter knowledge subtests, revealed no differences between treatments on upper and lower case letter names. The mean scores were 38.87 for the basal groups and 42.67 for the conceptual-language classes.

6. The interaction effects between treatments and Chronological age revealed that neither approach significantly favored younger or older pupils.

7. When intelligence was controlled, older pupils did significantly better in both treatments than younger pupils.

8. When the interaction effects of treatment and intelligence were examined, significant differences were noted in favor of the conceptual-language classes. Children in the conceptual-language group of high and average intelligence had moderately larger scores than pupils of comparable ability in the basal classes. The most pronounced difference, however, was with children with intelligence scores of 89 or below. The adjusted mean scores reveals a difference of 21.60 between low ability pupils in both treatments in favor of the conceptual-language classes.

9. There was no significant interaction between Gesell maturity ratings and performance in the treatments.

10. An examination of the achievement of boys and girls revealed no significant difference within or between the groups in the treatments in favor of either sex.

11. No significant interaction effects were observed between treatments and social economic status.

12. Three independent ratings by teachers of pupil behavior during the course of the study revealed no obserable changes in the adjustment of children. Only slight differences were noted in the median ratings between methods. An examination of the within treatment ratings showed a high degree of consistency from November to May. No deleterious social or emotional effects were reported. These findings should be interpreted in view of the limitations of teacher ratings discussed in Chapter IV.

13. The results of four individually administered concepts tests indicated that pupils were able to apply cognitive understandings derived in the conceptual-language classes to performance situations. Of particular interest was the high degree of significance noted in favor of the conceptual-language class means on the pre-test performance tasks as the study progressed.

14. Observations and tabulation of responses of high and average ability children interacting in group situations revealed that all pupils of both ability ranges in the conceptual-language group participated, and that they offered a greater number of answers and provided more different solutions than pupils in the basal reader classes. A greater degree of Cooperation and interaction was evident in the conceptual-language groups.

Conclusions

The results of the study demonstrated the effectiveness of a pre-reading which exposes kindergarten pupils to a significant content as a means for developing varied language experiences. This approach was superior to the basal-centered program in promoting general readiness for reading.

The use of many different language experiences, allowing pupils to see their own words in print, resulted in significantly higher visual discrimination of word forms ability for the conceptual-language classes.

The use of daily and systematic instruction in workbooks as a means for promoting auditory discrimination skill did not produce any significant difference between the conceptual-language and basal classes. Integrating incidental practice in auditory discrimination with language activities was an effective means of developing this skill.

Direct instruction in discriminating between letter forms and letter names did not provide an advantage for the basal classes on the letter knowledge subtest of the Murphy-Durrell Reading Readiness Analysis Test. The incidental exposure to letters through labeling, experience charts, and classroom signs resulted in slightly higher mean scores for the conceptual-language classes.

The study revealed that classifying pupils by maturity levels through the use of the Gesell School Readiness Test did not provide a discriminating basis for predicting subsequent success in either pre-reading program. When initial differences were statistically controlled, there were no significant differences in readiness gains between children with mature and immature ratings in either treatment.

The informal conceptual-language approach significantly favors pupils of all ability levels, particularly children with below average intelligence.

The question of chronological age as a criterion for success in a pre-reading program revealed that there were no significant differences between older and younger pupils in the treatments. However, when intelligence was controlled, older pupils did better than younger children irrespective of treatment.

An examination of the reading readiness of boys and girls, revealed no significant sex differences in either the basal or conceptual-language program.

The cognitive tests revealed that five-year-olds can profit from a concept-centered program. Pupils who have been exposed to major principles can apply these understandings to similar problems in different situations. As the study progressed pupils in the conceptual-language classes did significantly better on problem tests than children in the basal classes without the benefit of instruction.

Informal teacher ratings and tape recordings of group interactions revealed that high and average ability pupils in the conceptual-language classes participated in discussion more frequently, provided more verbal responses, cooperated and offered more different solutions than children in the basal classes.

There was no evidence to suggest that exposure to either a conceptual-language or basal reader program results in deleterious social and emotional effects.

Implications for Further Study

1. This investigation has raised the question of whether or not young children in an inquiry-approach to learning develop particular cognitive styles for attacking problems in new situations. The relationship between an instructional program which provides for inductive exposure to concepts and problem solving ability offers a fruitful area for research.

2. No attempt was made to measure manifectations of creativity in either of the treatments. Several group problems revealed that pupils in the conceptual-language classes seem to exhibit more divergent thinking behavior. However, the question of convergent and divergent thinking patterns as a consequence of different modes of classroom instruction remains unanswered.

3. The use of chronological age as a criterion for school admission must include consideration of the intellectual ability of pupils. The question of whether existing school entrance laws based on chronology should be modified to allow for variations in intellectual ability should be explored.

4. The literature on early childhood education stresses the importance of identifying and making special provision for immature children. This study revealed no significant differences in reading readiness gains between pupils of different maturity levels when pre-experimental differences were controlled. Further research is indicated in this area..

5. A longitudinal study should be conducted to assess the long-term results of the conceptual-language program in promoting reading achievement in subsequent grades.

APPENDICES

APPENDIX A

KINDERGARTEN SCHEDULE

Daily Kindergarten Routine

I. Opening exercises
  A. Informal talking or singing time
    1. Pupils share experiences
    2. Group songs or games
    3. Story telling or poetry time
  B. Daily planning
    1. Review "work charts"
    2. Discuss changes in "interest centers"
    3. Pupils suggest activities and projects
    4. Provide directions and special instructions

II. Reading Readiness treatments
  A. Group activity, following prescribed procedures
  B. Seatwork or related exercises

III. Activity and work time[1]
  A. Children work at "interest centers"
    1. Block building with accessories
    2. Wood working
    3. Art activities
    4. Science experiments
    5. Housekeeping games
    6. Library visits
  B. Special group projects
  C. Cooperative clean-up time

IV. Lunch time
  A. Children prepare and distribute food
  B. Social exchanges
  C. Cooperative clean-up

V. Outdoor period
  A. Free choice of available equipment
  B. Organized group activities
  C. Field trips, neighborhood walks

VI. Music and rhythms
  A. Use of classroom instruments
  B. Various music and rhythmic games

VII. Story time
  A. Read story
  B. Tell and illustrate stories
  D. Poetry or dramatizations

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[1] The terms "free play," "work time," and "activity time" all refer to self-selected activities pursued by children

VIII. Discussion and summary
  A. Children relate "highlights"
  B. Plan for next session
  C. Dismissal

APPENDIX B

CONCEPT AND GROUP LANGUAGE TESTS

Matter
Science Concept Test I

(Pre- and Post- Test)

Examiner: WE ARE GOING TO PLAY A GAME WITH SOME TOYS THAT YOU HAVE ALREADY SEEN BEFORE. LOOK CAREFULLY AT THE THINGS I SHOW YOU. I AM GOING TO ASK YOU SOME QUESTIONS ABOUT THEM.

1. Place two blocks on a table that are exactly alike. LOOK AT THESE BLOCKS AND TELL ME HOW THEY ARE ALIKE. (4 points)

______Color
______Shape (square)
______Size
______Holes in center

2. Place sets of two similar but different objects on a table. LOOK AT THESE THINGS AND TELL ME HOW THEY ARE ALIKE (10 points)

a. Hair Brushes
______Brushes
______Shape
______Other features
______Other
______Other

b. Automobiles
______Cars
______Shapes
______Other features
______Other
______Other

3. Show the child a button and a small ball. LOOK AT THESE TWO THINGS AND TELL ME HOW THEY ARE ALIKE. (4 points)

______(They are round or the same shape)

4. Display together the following similar but different objects: dolls; cups; chair and table; and wooden figures. PICK UP ALL THE THINGS THAT GO TOGETHER. WHY DID YOU PUT THEM TOGETHER THIS WAY? (10 points)

Energy
Science Concept Test II

Examiner: WE ARE GOING TO PLAY A GAME WITH SOME TOYS THAT YOU HAVE ALREADY SEEN BEFORE. LOOK CAREFULLY AT THE THINGS I SHOW YOU. I AM GOING TO ASK YOU SOME QUESTIONS ABOUT THEM.

1. Display a block: SHOW ME HOW YOU WOULD PUSH THIS BLOCK. NOW SHOW ME HOW YOU WOULD PULL IT. I WANT YOU TO WATCH ME AND LISTEN CAREFULLY TO WHAT I SAY. DO WE PUSH OR PULL WHEN WE DO THE FOLLOWING THINGS: (7 points)

Verbal	Manipulative
A. THROW A BALL____________	WATCH ME (demonstrate)_________
B. PICK UP TRUCK____________	WATCH ME (demonstrate)_________
C. IS THIS A PUSH OR PULL?______	
D. WHEN I SLIDE A BLOCK TOWARD YOU________________	WATCH ME (demonstrate)_________

2. Place a truck with a block on an inclined plane and release it. Remove the block place it in same starting position. WHICH TRUCK WILL GO FARTHER? THE ONE WITH OR WITHOUT THE BLOCK? (2 points)

A.______________ WHY? B. Weight________________

3. Place a marble on an inclined plane. IF I LET IT GO, WHICH WAY WILL THE MARBLE GO? (2 points)

WHY? A.________________ (Drawn, fall, pull toward floor)

4. Place two doughnut shaped magnets on a stick. WHY DOES THE TOP ONE GO UP?

A.______________ (Push away from one another)

B. WHY DO THEY COME TOGETHER? (They are magnets, attract)

C. Place a dish with salt mixed in iron filing on table. WHAT WILL HAPPEN IF I HOLD THE MAGNET OVER THIS DISH?

______________ (Pull the iron, black pieces, up)

D. WHAT WILL HAPPEN IF I PLACE THE MAGNET UNDERNEATH THE DISH? WHY DID IT HAPPEN (Move the iron)

____

E. Pick up a Canadian nickel with a magnet. WHY DOES THE MAGNET PICK UP THE CANADIAN NICKEL?

__________ (Metal attracted to the magnet)

F. Attempt to pick an American nickel with magnet. WHY WON'T THE MAGNET PICK UP THE AMERICAN NICKEL?

__________ (Accept any response that implies magnets pick up only certain metals)

Group Discussion Problems

1. Show a picture of a pie shaped like the map of the United States. WHAT IS THIS?

2. Give each child 2 pieces of a puzzle. Show the finished pattern. I HAVE GIVEN EACH OF YOU 2 PIECES OF PUZZLE THAT WHEN COMPLETED SHOULD LOOK LIKE THIS (illustrate). WORK TOGETHER AND MAKE THE PUZZLE.

3. Show a large picture of a school bus dropping children off in the country. LOOK AT THE PICTURE AND TELL ME ABOUT IT. CAN ANYONE TELL ME A STORY ABOUT THE PICTURE?

4. Give each child several small pieces of wood. DIVIDE THESE UP AMONG YOU SO THAT EVERYONE HAS THE SAME NUMBER OF PIECES.

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